

1. FACTORS that influence the introduction of new communications technology: faster service, higher speed, lower costs, more reliability, higher capacity, greater efficiency, and better security. New technologies are introduced when system improvement and upgrade are required, new systems are necessary, costs are favorable, or other advantages are offered.

Telecommunications is undergoing a fundamental transformation as a result of changes in communications technology and convergence with information technology. Consequently, the economic, political, and military telecommunications environments are changing at unprecedented rates through the employment of integrated communications and computing technologies.

The rate of conversion varies country to country, region to region. In general foreign government administrations' communications plans (usually 5 to 10 Year Plans) are administered by telecommunications monopolies (usually a Ministry of Posts and Telecommunications or the equivalent). Such plans are for overall improvement, upgrade, production, etc., and should be integral to the country's overall plans. A typical 5-Year Plan for Telecommunications could call, for example, for increases in telephone instruments for the general populace (which necessitates an increased number of switches, lines, etc.), new systems for specialized applications (an

~~SECRET~~

25X1

improved railway network telecommunications system, for example), the first use of a communications satellite--or increased use of comsats for rural communications using TDMA, SCPC or spread spectrum techniques, a local area (bypass) network combining fiber optics and millimeter wave radio relay for the nuclear industry, introduction of voice encryption for high level governmental communications and perhaps a digitized encrypted voice radiotelephone for the country's leadership, the installation of a fiber optic cable between major, high-capacity switching nodes, and the introduction of a packet switching network for the banking industry.

New technology is introduced in the course of implementation of such Plans. For instance, a new switch certainly would be an all-electronic digital switch (which can process both analog and digital signals and would be used for future conversion to an all-digital network). The new network for railway communications would be digital (rather than analog because of its lower cost and ability to handle the complex machine communications inherent in a railway control network) and include both radio relay and fiber optic cable as well as single-channel digital voice radios for train-to-train and train-to-station links. The first use of a satellite for communications would be for international communications and probably would use circuits leased from INTELSAT or some regional satellite systems such as PALAPA. The first use for domestic (in-country) communications would include

SECRET

25X1

military command and control, energy (oil field, etc.), small isolated communities, or widely separate operations. A local area network (LAN) for sensitive operations such as nuclear activities could combine fiber optic cable links with radios at higher-frequencies in the 18 to 50 GHz range for high-capacity digital signals. The LAN could also use multiple access schemes (such as time division--TDMA) to provide digital telephone, data and facsimile or graphics service to widely separated users.

2. ASSUMPTIONS: Inherent in the writing of the trends study.

The basic assumption was that the world's telecommunications infrastructure is evolutionarily converting from an analog-based to a digital-based system. The development of microprocessors, the integration of computers and telecommunications devices, and the efficiency and economics of using the advanced technology will pull telecommunications toward digitalization. The rate of such conversion will depend on the particular country's goals, status of telecommunications development, and the financial ability to fund the necessary projects. The growth and spread of digitalization would eventually encompass integrated digital networks, integrated digital services, and an integrated broadband network.

SECRET

25X1